Before the
Federal Communications Commission
Washington, DC 20554

In the matter of: **Usage of the Public Switched Network by Information Service and Internet Access Providers**	**CC Docket No. 96-263**

I am submitting my response comments to the Federal Communications Commission's (FCC) Notice of Inquiry on Docket No. 96-263. In agreement with the FCC's standing on this issue, the FCC should not grant the local phone companies the authority to charge interstate access charges to Internet Service Providers (ISPs).

My response is based on a microeconomic analysis of the potential impacts the access charge would have on ISPs and subscribers. An access charge would have short and long term effects. In the short run, ISPs would incur higher costs resulting in economic losses for small sized (marginal producer) ISPs, and would reduce the quantity demanded for Internet services, resulting in higher costs to subscribers. In the long run, the marginal (smaller) ISPs would be forced out of the market. This would then result in decreased market competition through a possible formation of an oligopoly among large and medium ISPs, and thus even higher Internet access charges to subscribers, which would cause subscribers to further reduce or even stop using Internet services altogether. If that happens, the local phone companies may find that there will not be as many subscriber usage minutes on which to impose access charges, and in the end, may not be able to collect enough revenues to upgrade their networks.

Please find enclosed a more detailed microeconomic explanation of my findings. Please send any reply comments to the below address.

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A Microeconomic Analysis of the Potential Impact of Interstate Access Charges on Internet Service Providers and Subscribers

I. Background: FCC Docket No. 96-488

The Federal Communications Commission (FCC) issued a Notice of Inquiry on whether or not providers of information services, such as Internet Service Providers (ISPs), should be subject to the interstate access charges that local telephone companies assess on long-distance carriers. The FCC has also asked for public comment on how to create incentives for companies to make the most efficient use of the telephone network for Internet and other information services.

Currently, long-distance companies, which are considered "carriers," pay interstate access charges to local telephone companies. Access charges include per-minute fees for incoming and outgoing calls. Under current FCC rules, Internet service providers are considered "enhance service providers," and the FCC does not regulate the rates that enhanced service providers charge to their subscribers. ISPs are considered "end users" when they purchase services from local telephone companies, because they pay a flat-rate for their business line. Therefore, ISPs pay the same rates as any other business customer.

In June 1996, Pacific Bell, Bell Atlantic, US West, and NYNEX submitted studies to the FCC regarding the effects of Internet usage on their networks. The companies argued that the costs imposed on local telephone companies to support Internet access were not covered by the existing rate structure. They also stated that Internet usage caused congestion in part of the local public switched telephone network (PSTN). Consequently, these studies have prompted several other local phone companies to come forward and ask the FCC for the authority to charge interstate access charges to ISPs for use of voice-oriented circuit-switched networks.

The FCC should not grant the local phone companies the authority to charge interstate access charges to Internet Service Providers. An access charge would have short and long term effects. In the

short run, ISPs would incur higher costs resulting in economic losses for small sized (marginal producer) ISPs, and would reduce the quantity demanded for Internet services, resulting in higher costs to subscribers. In the long run, the marginal (smaller) ISPs would be forced out of the market. This would then result in decreased market competition through a possible formation of an oligopoly among large and medium ISPs, and thus even higher Internet access charges to subscribers.

II. Economic Impact of Access Charge on Internet Service Providers

A. Supply

Some inputs that make up Internet service include a telephone line, servers, and browser software. If local phone companies imposed a per-minute interstate access charge on ISPs, ISPs would incur per-minute charges on all incoming and outgoing calls. This increase in the cost of the telephone lines (an input) would cause the ISP's marginal costs to increase. Bringing forth the same quantity of Internet access time cost the ISP more, and thus cause a decrease in market supply, as depicted in Figure1, with the market supply curve shifting from S_o to S_1, and a decrease in quantity of Internet access time demanded. With this, the equilibrium price of Internet access time will rise from P_o to P_1, and the equilibrium quantity will fall from Q_0 to Q_1. How much the equilibrium price rises is determined, in part, by the ISP's elasticity of supply.

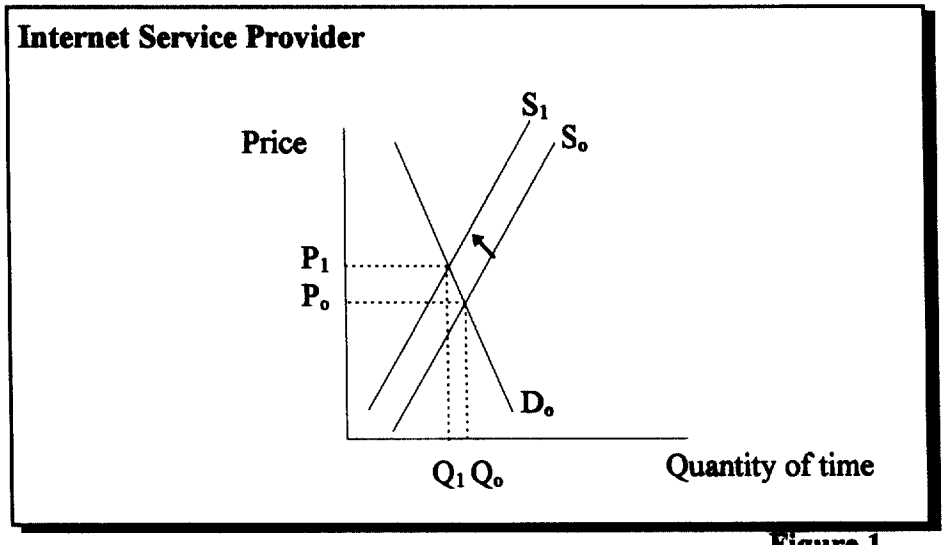

Figure 1

B. Elasticity of Supply

Currently, there are very few alternatives for phone lines. Cable lines, cable phones, and satellites are input alternatives; however, since they are more costly inputs, they are not currently considered to be close substitutes. Substituting phone lines with one of these alternatives would preclude the 6 million home subscribers using direct dial-up networking over their local phone lines. Another substitute is Integrated Services Digital Network (ISDN) which is a high-speed digital phone line. Since it is not analog, ISDN does not support normal voice, fax or modem communications, and would therefore not be subject to an interstate access charge. However, ISPs who used ISDN as a single telecommunications distribution input for Internet access would not reach the widest range of customers, because the installation cost for ISDN is significant. For this reason, ISPs are bound to offering Internet access using a distribution medium which the majority of their subscribers currently have available—and that's local phone lines.

With the unavailability of close substitutes, the elasticity of supply is relatively inelastic in the short run. As these technologies become available in the future as affordable substitutes for phone lines, then elasticity of supply should become more elastic.

III. Economic Impact of Access Charge on Internet Subscribers

A. Demand

The increase in equilibrium price resulting from the decrease in market supply for Internet access time also causes a decrease in quantity demanded. Because the provider's elasticity of supply is not perfectly inelastic, they will pass some of their costs on to their subscribers. Bearing in mind it is a per-minute charge, subscribers may be faced with per-minute charges as well which will cause them to decrease their amount of time spent on-line, or will cause some subscribers to

completely stop using it. How much of the charge they will bear is determined, in part, by the subscriber's elasticity of demand.

B. Elasticity of Demand

One of the primary determinants of demand is the availability or lack of close substitutes. Subscribers are faced with the same situation as providers in finding close substitutes. Just as cable modems, cable phones and satellites are currently not substitutes for providers, they are also not feasible substitutes for phone lines for the majority of subscribers in the short run.

A second determinant of elasticity of demand is time. The longer subscribers have to react to the price increase, the more elastic the demand. In the short run, subscribers' demand will be less elastic. The future affordability of cable modems, cable phones, and satellites will make these technologies viable substitutes, and will cause demand to become more elastic in the long run. Both determinants considered, subscribers' elasticity of demand is relatively inelastic in the short run. Therefore, subscribers will share a portion of the charge, and quantity of demand will fall. Subscribers who continue to use Internet will limit their access time (as discussed below), and some subscribers will stop using it altogether.

IV. Combined Supply and Demand Impact

Now, the question is how much of the burden the ISPs will bear from the price increase, and how much they will be able to pass to the subscribers. This depends on the provider's elasticity of supply and the subscriber's elasticity of demand. The more elastic a provider's elasticity of supply, the less of the burden he will bear from the price increase. The more elastic a subscriber's elasticity of demand, the less of the burden he will bear. In this case, without a lot of available close substitutes, a provider's supply curve, as well as a subscriber's demand curve, are both relatively inelastic in the short run, and therefore they will have to share the burden of the price increase.

The ISP's supply curve is more inelastic than the subscriber's demand curve. With an increase in costs as subscribers use additional minutes of Internet time, declining marginal value may set in. The marginal value of the next minute on-line will not be worth as much as the last minute, and the subscriber's desire to stay on-line another minute declines. Assuming subscribers behave rationally, subscribers with marginal values less than their costs will decrease their time on-line, or stop using Internet services altogether.

To demonstrate the effect of the access charge on both ISPs and subscribers, assume ISPs charged $5.00 per hour, or 12 cents per minute. At 1200 minutes (20 hours) of Internet access, subscribers would pay 12 cents per minute, or $144 total. According to the subscriber's elasticity of demand and the provider's elasticity of supply, the ISP would share a larger burden of the price increase. As shown in Figure 2, a 5-cent access charge per minute would translate into a 2-cent rise in equilibrium price per minute to increase the price per minute charge to 14 cents, and a fall in quantity of access time provided from 1200 to 1000 minutes. After the 5-cent access charge is paid, the provider now receives 9 cents per minute for a total revenue of $110. This would result in economic losses in the ISP market, where the marginal providers would suffer the economic loss.

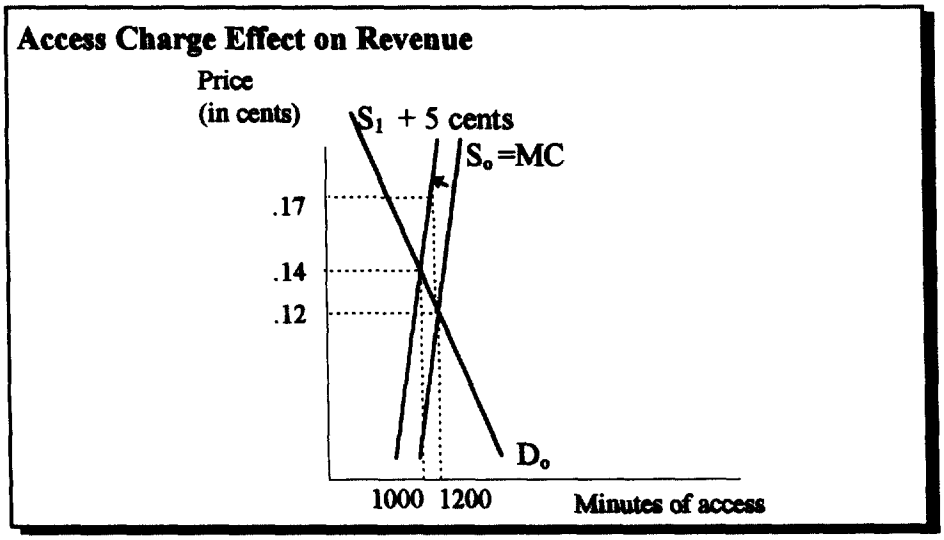

Figure2

V. Long Run Impacts and Implications

Currently, the Internet provider market consists of a few large nationwide companies such as America On Line, Prodigy and Compuserve. It also consists of medium-sized regional companies such as Erols, and a large number of small providers which provide affordable Internet access. Because the smaller companies can be competitive with the larger companies suggests that the long-run average costs, in the present, is relatively flat or at the point of increasing, over a large range of output, as shown in Figure 3.

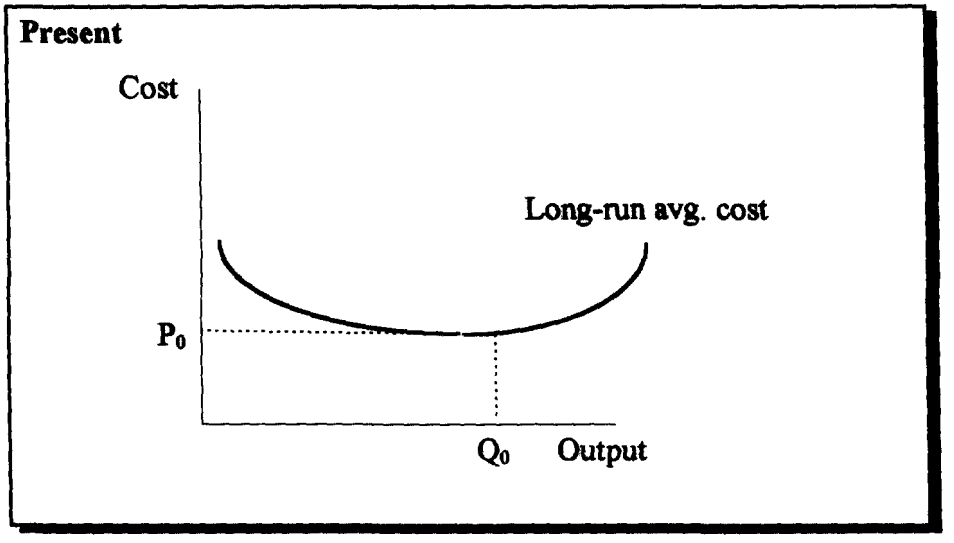

Figure 3

With the introduction of an access charge, the average total costs will rise for all ISPs, even though a portion of the cost is passed on to subscribers. The large and medium providers will survive this rise in the short run. However, the small providers (marginal companies) will suffer economic losses in the short run, and will therefore exit the market in the long run. A few large and medium providers would gain natural monopoly power, resulting in oligopoly. The temptation will be for the oligopoly companies to form a cartel and charge even higher prices and lower output. The market then turns into a decreasing-cost market as shown in Figure 4, with Q_0 shifting to Q_1 and P_0 shifting to P_1. A decreasing-cost market can create natural barriers to new competition entering the market because the start-up costs would be too great for smaller companies to enter the market.

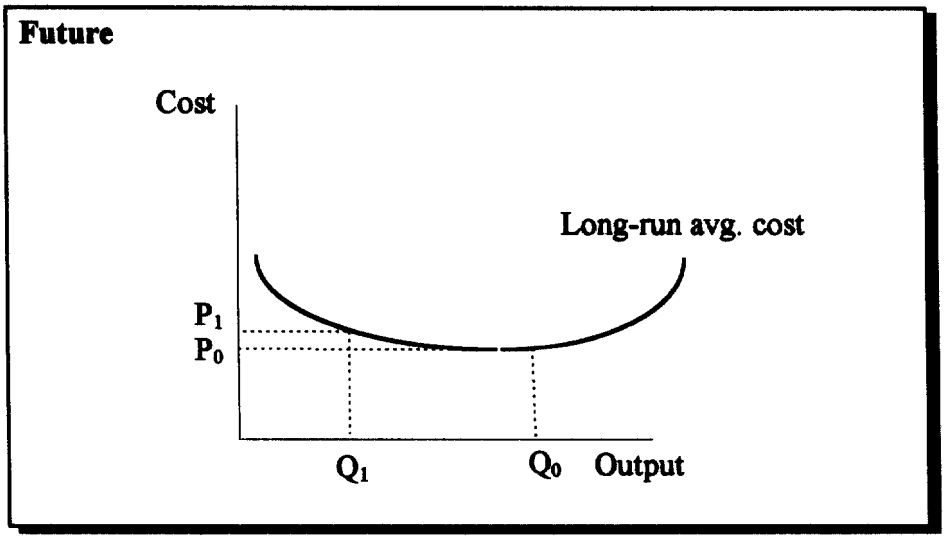

Figure 4

VI. Conclusion

In the short run, an access charge would cause a decrease in supply and a decrease in quantity of Internet access time demanded. The elasticity of supply and demand are both relatively inelastic; however, elasticity of demand is less inelastic than elasticity of supply. Because of this, with the introduction of an access charge, ISPs would bear a greater portion of the charge, but would still be able to pass some of the costs to subscribers. The marginal (small) ISPs would suffer economic losses in the short run, and would exit the market in the long run. This could result in a formation of a cartel among the large and medium sized ISPs, where they would charge even higher prices and lower output.

In summary, an access charge will serve to suppress competition in the ISP marketplace. The higher prices which the cartels set would cause even more subscribers to reduce the amount of time spent on-line, or stop using Internet access altogether until affordable substitutes become available. If that happens, the local phone companies may find that there will not be as many subscriber usage minutes on which to impose access charges, and in the end, may not be able to collect enough revenues to upgrade their networks.